

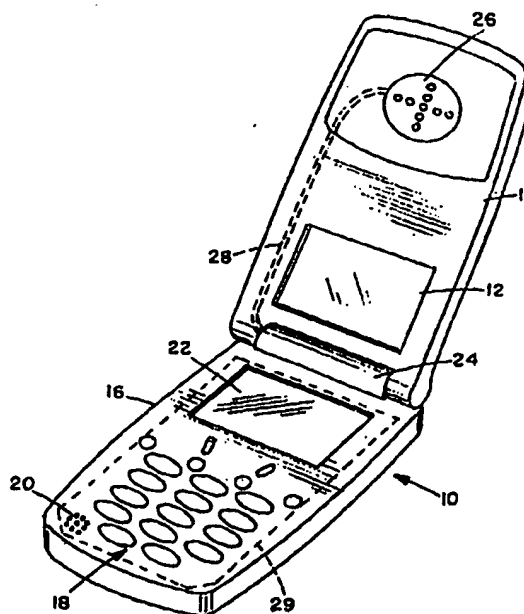


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: H04M 1/02	A1	(11) International Publication Number: WO 99/21343 (43) International Publication Date: 29 April 1999 (29.04.99)
(21) International Application Number: PCT/US98/22066 (22) International Filing Date: 19 October 1998 (19.10.98) (30) Priority Data: 08/953,818 20 October 1997 (20.10.97) US (71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US). (72) Inventors: AZARTASH, Mahmoud; 2038 Sequoia Street, San Marcos, CA 92069 (US). McCAUGHAN, Carolyn; 13244 Carolee Avenue, San Diego, CA 92129 (US). SPENCER, Reginald, N.; Suite 2708, 28 Allegheny Avenue, Baltimore, MD 21204-1375 (US). HUBBARD, William, A.; 33 Alderman Court, Timonium, MD 21093 (US). (74) Agents: MILLER, Russell, B. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: PORTABLE TELEPHONE WITH SEE-THROUGH FLIP ELEMENT**(57) Abstract**

A telephone or flip phone (10) has a base member (16) and a cover member (14) hinged (24) to one end of the base member for movement between a closed position covering at least a major portion of the base member, and an open position rotated away from the base member for receiving and making calls. The base member has a display (22) for displaying information, and the cover member has a transparent or clear window (12) which extends at least over the display when the cover member is in the closed position, so that the user can view the display (22) at all times, even when the cover (14) is in the closed position.



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PORTABLE TELEPHONE WITH SEE-THROUGH FLIP ELEMENT

BACKGROUND OF THE INVENTION

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The present invention relates generally to portable telephones of the flip phone type having a base with a keypad for entering numbers and commands, and a cover hinged to one end of the base for covering the keypad when not in use. This type of phone also often has a display for features such as caller ID, messages, paging, and so on, and is a design often used in wireless or portable cellular phones.

The cover of flip-style phones with a display is normally of opaque material, and the cover extends over the display when closed. Thus, it is not possible to view incoming messages and pages without opening the cover. The user therefore cannot readily use such features as caller ID, messaging, paging and the like with such phones.

SUMMARY OF THE INVENTION

20 It is an object of the present invention to provide a new and improved flip phone in which the display or screen can be readily viewed at all times.

According to the present invention, a flip phone is provided which comprises a base having a display, and a cover having one end hinged to a corresponding end of the base, the cover being movable between a closed position in which it covers at least a major portion of the base, and an open position in which the cover is rotated outwardly away from the base to uncover the display, and the cover is transparent over at least a predetermined area of the cover which extends over the display when the cover is closed, so that the user can view the display when the cover is in the closed position.

The cover may have a transparent window covering the display, or the entire cover may be of transparent material. Additionally, the cover may include an opening in the form of a window above the display so that the user may see and even touch the display directly through the opening in the cover. This embodiment would be well suited to use in a portable telephone or PDA which has a touch-sensitive screen. In a preferred embodiment of the invention, the transparent or clear window is a

magnifying lens, so that the display is magnified and the user can view the message or displayed phone number even more easily.

The phone includes the conventional circuitry, user ear piece and microphone. The ear piece may be mounted in the lid or cover, and the
5 microphone in the base, or alternatively the microphone may be in the cover with the earphone in the base. In either case, leads connected between the ear piece or the microphone, respectively, and the phone circuitry are routed through the lid or cover to one side of the transparent window.

With this invention, the user can see messages readily without
10 having to open the phone. Also, caller ID is effective since the caller can be identified before the user answers the phone. In previous arrangements where the display was concealed by the lid or cover, caller ID was ineffective because the user could not see the ID until opening the cover, thereby answering the phone. With this arrangement, caller ID can be viewed
15 readily before deciding whether to answer the phone. The user can also readily read text or numerical pages on the display at any time without opening the flip cover.

BRIEF DESCRIPTION OF THE DRAWINGS

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The features, objects, and advantages of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference characters identify correspondingly throughout and wherein:

25 FIG. 1 is a perspective view of a flip phone according to a first embodiment of the invention incorporating the viewing window;

FIG. 2 is a perspective view of the telephone with the flip cover open;

FIG. 3 is a side view, partially cut away to show the arrangement of the viewing window and display panel;

30 FIG. 4 is a perspective view of an alternative configuration of the flip phone;

FIG. 5 shows the telephone of FIG. 4, with the flip cover open; and

FIG. 6 is a side view, partially cut away to show the viewing window and display panel alignment.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1-3 of the drawings illustrate a flip phone or telephone 10 according to a first embodiment of the invention in which a transparent viewing window 12 is provided in the flip cover or lid 14. The phone 10 has a base 16 having a keypad 18, microphone 20 and display 22. The display is used for messages, paging, caller ID and the like.

The flip cover 14 is pivotally secured to one end of the base 16 via hinge 24 so that it can be flipped between the closed position of FIG. 1, in which it covers at least a major portion of the base 16, and the open position of FIG. 2. The lid 14 has an ear piece 26 adjacent its free end. The viewing window 12 is positioned to extend over the display 22 when the lid or cover 14 is in the closed position, as best illustrated in FIG. 3. The flip phone is arranged with much of the necessary electronics in the base 16 of the phone, and the ear piece 26 is connected to the phone circuitry in the base via leads 28 which are routed to one side of the viewing window 12, as illustrated in FIG. 2, and to the base through hinge 24. The phone electronics will typically be provided on a printed wiring board 29 which is located beneath keypad 18, as illustrated schematically in FIG. 2. The cover 14 can then be formed as a relatively thin plastic piece that houses only the ear piece, and perhaps a vibrator.

The viewing window 12 may be of any suitable clear material, such as clear plastic, and is preferably formed as a magnifying lens, as best illustrated in FIG. 3, so that any information on the display 22 will be visible to the user without having to open the flip cover 14, and will be magnified for easy viewing. Any desired magnification may be used, although the magnification is preferably of the order of 1.5 to 2.5. The remainder of the flip cover 14, apart from the viewing window 12, may be of opaque plastic material or the like. Alternatively, the entire cover 14 may be of transparent or clear material, such as clear plastic. In the latter case, the portion of the cover overlying the display 22 may be formed as a magnifying lens, if desired.

In an alternate embodiment, the viewing window 12 is not made of plastic or any other material, but rather is merely an opening in the flip cover 14 so that the user may see and touch the display 22 directly. This alternate embodiment is particularly useful when used with a touch sensitive display. However, this embodiment may also be advantageous because of its lower cost than the other plastic window embodiments.

When the flip cover 14 is opened, the user can operate the phone 10 either to make calls or receive incoming calls, with the ear piece 26 in the cover against the ear and the microphone 20 in the base 16 adjacent the mouth. The ear piece 26 alone may be mounted in the cover 14, or
5 alternatively the ringer or speaker and vibrator (not illustrated) could also be mounted in the cover 14, with the remainder of the phone circuitry (not illustrated) mounted in the base 16.

FIGS. 4-6 illustrate an alternative phone configuration 30 in which a base 31 has a keypad 32 and a display 34 as in the previous embodiment, and
10 a cover 36 is hinged to one end of the base 31 via hinge 38. However, unlike the previous embodiment, in this embodiment the microphone 40 is mounted adjacent the free end of the cover, while the ear piece 42 is mounted adjacent the free end of the base 31. As in the previous embodiment, the phone is of a clam-shell type and the cover or lid 36 covers
15 both the keypad 32 and the display 34 when closed. However, in this embodiment, the keypad 32 and display 34 are in a recessed region and the cover 36 fits into the recessed region when closed, leaving the ear piece 42 exposed, as illustrated in FIG. 5.

As in the previous embodiment, the cover 36 is provided with a
20 transparent window 44 which is located over the display 34 when the cover 36 is closed, so that the user can read any information on the display 34 without having to flip open the cover 36. The remainder of the cover 36 may be of opaque material, or the entire cover 36 may be transparent. The window 44 is preferably formed as a magnifying lens, as in the previous
25 embodiment, so that information on the display is magnified and can be read more easily by the user. The material may be transparent plastic or the like. However, as in the previous embodiment, the window 44 may be of non-magnifying plastic, or may merely be an opening in the flip cover 36.

The cover 36 is relatively thin, and the circuitry (not illustrated) for
30 the phone is preferably all housed in the base 31. Connecting leads 46 from the microphone 40 to the circuitry in the base via hinge 38 are routed to one side of the viewing window 44, as illustrated in FIG. 5. When the cover 36 is closed as in FIGS. 4 and 6, the user can still see any information appearing in the display 34 via window 44, such as caller ID, messages, and paging
35 information. Therefore, the cover 36 does not have to be flipped open to obtain such information, as was necessary in the past. When a call is to be made or answered, the user simply flips open the cover 36 as in FIG. 5, placing the ear piece 42 against the ear with the microphone 40 in the cover adjacent the mouth.

In existing flip phones, the display is concealed unless the cover is opened. Thus, in reality, features such as caller ID cannot be used, since the user can only see the caller ID on opening the cover, which simultaneously answers the call. With this invention, the flip phone user can see the caller
5 ID before answering the call, and can elect not to answer if desired. Additionally, with conventional flip phones, the user cannot see any messages or pages until and unless the flip cover is opened, so that there may be some delay until such messages or pages are answered. With this invention, any messages or pages are immediately visible without opening
10 the cover.

The previous description of the preferred embodiments is provided to enable any person skilled in the art to make or use the present invention. The various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be
15 applied to other embodiments without the use of the inventive faculty. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

WE CLAIM:

CLAIMS

1. A telephone, comprising:
 - 2 a base member having a display for displaying information, the base member having opposite first and second ends;
 - 4 a cover member having opposite first and second ends, and a hinge member pivotally connecting the first end of the cover to the first end of the
 - 6 base, whereby the cover member is movable between a closed position in which it covers at least a major portion of the base, and an open position in
 - 8 which the cover is rotated outwardly away from the base to uncover the base; and
 - 10 at least a window portion of the cover member being transparent, the window portion extending over at least the display when the cover member
 - 12 is in the closed position, whereby the user can view the display when the cover is in the closed position.
2. The telephone as claimed in claim 1, wherein the window
- 2 portion is a magnifying lens.
3. The telephone as claimed in claim 1, wherein the entire cover
- 2 member is formed of transparent material.
4. The telephone as claimed in claim 1, wherein the window
- 2 portion only is transparent and the remainder of the cover member outside the window portion is of translucent material.
5. The telephone as claimed in claim 1, wherein the window
- 2 portion is of clear plastic material.
6. The telephone as claimed in claim 1, including an ear piece
- 2 mounted adjacent the second end of the cover member, a microphone mounted adjacent the second end of the base member, phone control
- 4 circuitry mounted in the base member, and connecting leads extending from the ear piece to the phone control circuitry, the connecting leads being
- 6 routed to one side of said window portion.
7. The telephone as claimed in claim 6, wherein the cover
- 2 member completely covers the base member when in the closed position.

8. The telephone as claimed in claim 1, including a microphone
2 mounted adjacent the second end of the cover member, an ear piece
mounted adjacent the second end of the base member, phone control
4 circuitry mounted in the base member, and connecting leads extending
through the cover member from the microphone to the phone control
6 circuitry, the connecting leads being routed to one side of said window
portion.

9. The telephone as claimed in claim 1 wherein said window
2 portion is an opening in said cover member.

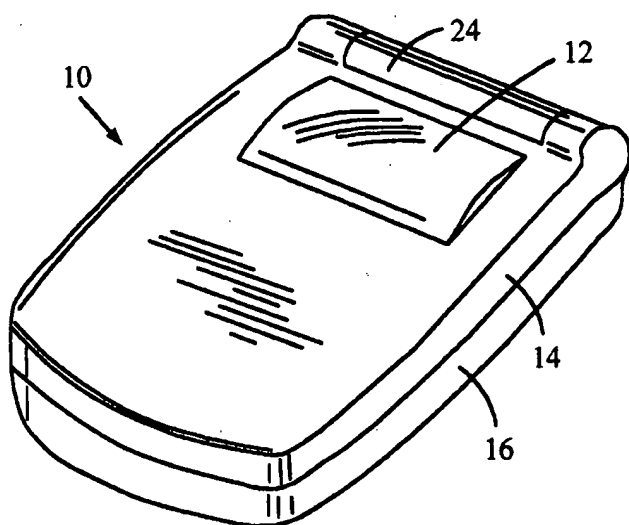


FIG. 1

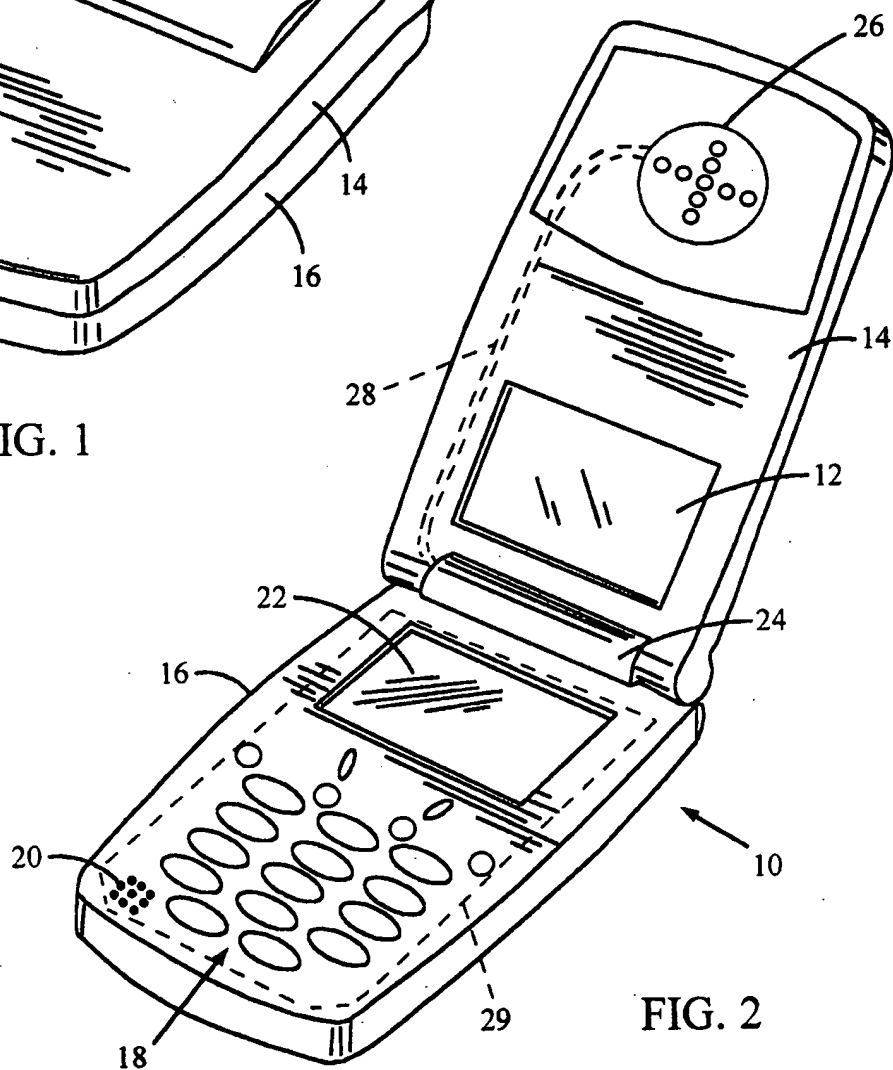


FIG. 2

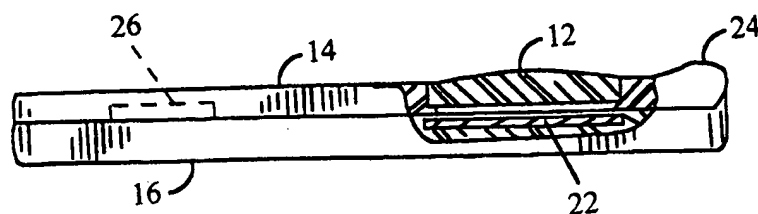
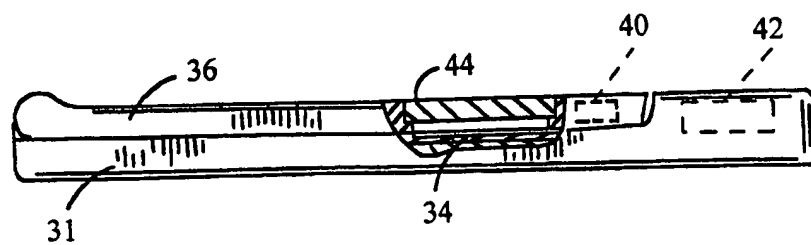
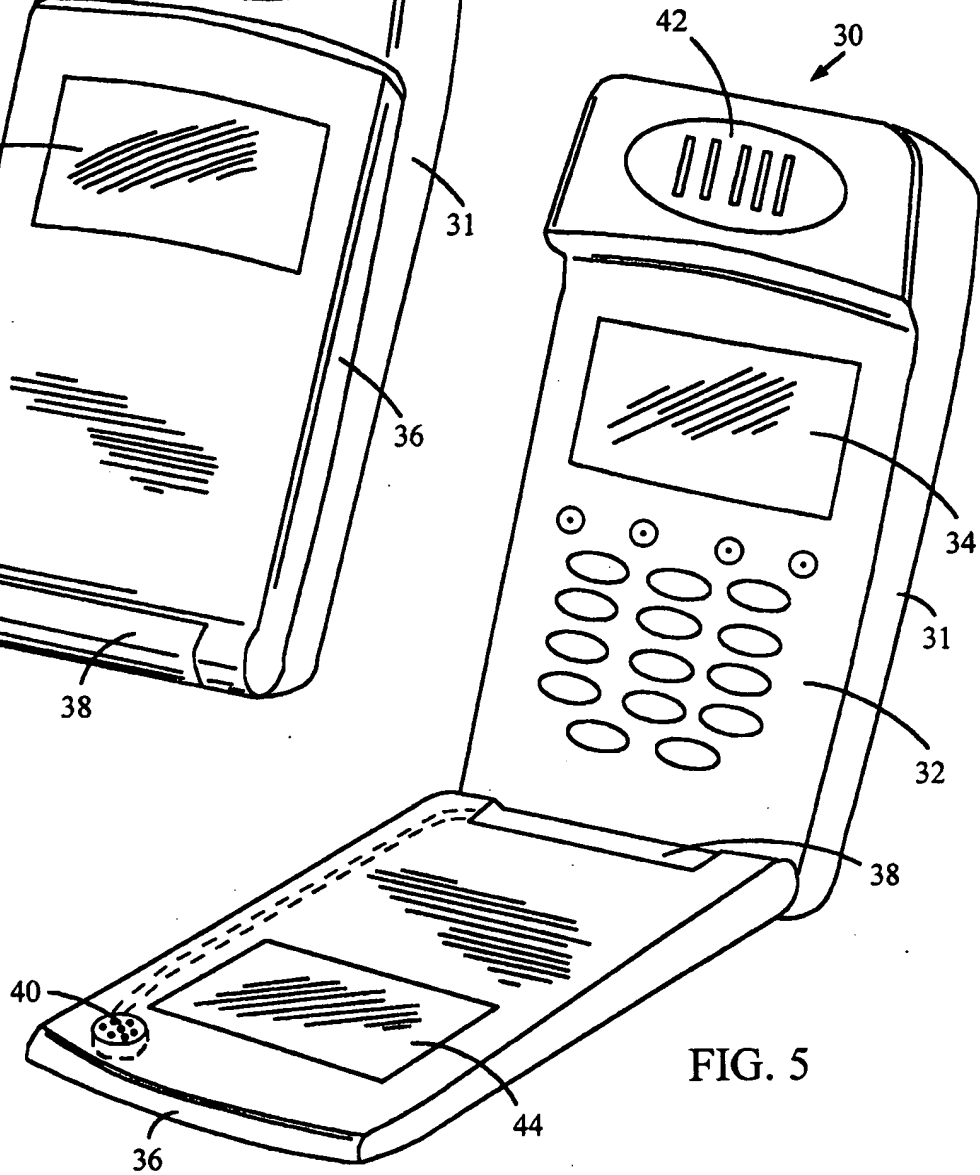
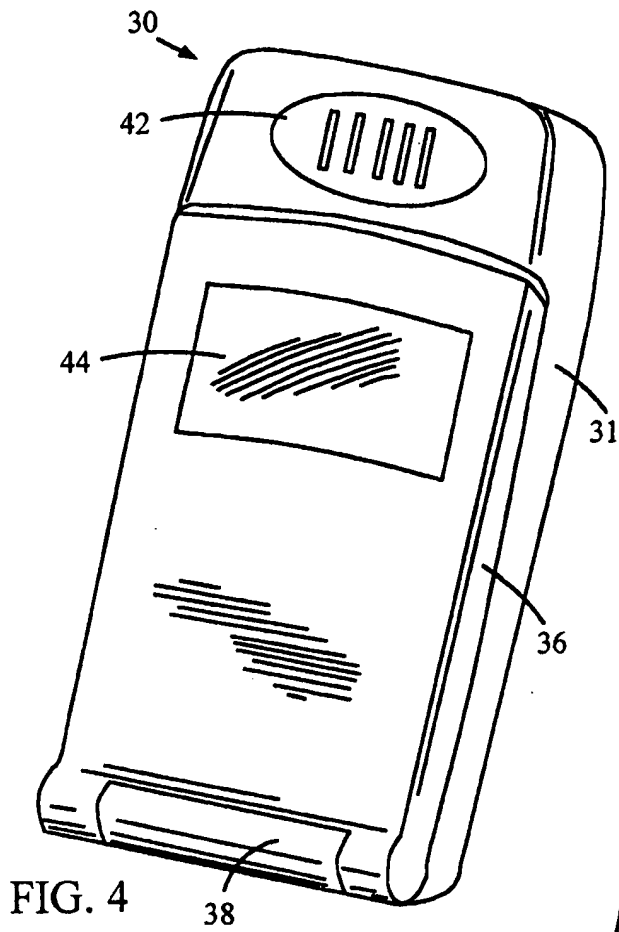


FIG. 3



INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/22066

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04M

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 069 (E-1318), 10 February 1993 & JP 04 273639 A (TOSHIBA CORP), 29 September 1992 see abstract	1,4,7,8
X	--- PATENT ABSTRACTS OF JAPAN vol. 017, no. 317 (E-1382), 16 June 1993 & JP 05.030166 A (MATSUSHITA ELECTRIC IND CO LTD), 5 February 1993 see abstract	1,4,8
X	--- EP 0 602 828 A (AT & T CORP) 22 June 1994 see column 2, line 50 - line 56 see column 3, line 55 - column 4, line 37 see figure 1 --- -/--	1,3,6,7

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Date of mailing of the international search report

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 98 23077 A (ERICSSON GE MOBILE INC) 28 May 1998 see page 4, line 19 - page 6, line 24 see figures 1-4 ---	1,3-5, 7-9
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Information on patent family members

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